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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/652,503	08/31/2000	Vernon M. Williams	4303US (99-0584)	3679

7590

04/09/2002

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EXAMINER

BREWSTER, WILLIAM M

ART UNIT

PAPER NUMBER

2823

DATE MAILED: 04/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/652,503

Applicant(s)

WILLIAMS, VERNON M.

Examiner

William M. Brewster

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) See Continuation Sheet is/are pending in the application.
- 4a) Of the above claim(s) See Continuation Sheet is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-11, 13, 16-25, 51-61, 63 and 66-75 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

Continuation of Disposition of Claims: Claims pending in the application are 1-11, 13, 16-35, 38, 40, 41, 43, 44, 46-48, 51-61, 63, 66-82, 85, 87, 88 and 91-98.

Continuation of Disposition of Claims: Claims withdrawn from consideration are 26-35, 38, 40, 41, 43, 44, 46-48, 76-82, 85, 87, 88 and 91-98.

DETAILED ACTION

Election/Restrictions

Claims 26-35, 38, 40, 41, 43, 44, 46-48, 76-82, 85, 87, and 88 withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 15.

Applicant's election without traverse of claims 1-11, 13, 16-25, 51-61, 63, 66-75 in Paper No. 15 is acknowledged.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-11, 13, 16-21, 24-25, 51-61, 63, 66-71, 74-75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sony Corporation, JP Patent No. 6-151492 in view of Chia et al., U.S. Patent No. 6,081,997.

Sony anticipates a method of molding a semiconductor assembly in a mold cavity 13 of a transfer mold comprising: in fig. 7, providing an assembly, fig. 3, with carrier substrate and interposer including said at least one substrate, a die 15 with conductive

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structures protruding therefrom, the leads, having at least one surface in said mold cavity, positioning said at least one substrate substantially vertically; said transfer mold having said at least one cavity substantially vertically oriented, said transfer mold including at least one gate 8 at a lower portion of said at least one cavity and at least one vent 7 at an upper portion thereof, and introducing a flowable material 16 onto said at least one substrate of said at least one substrate in a substantially vertical direction in said mold cavity, introducing said flowable material through said at least one gate, until a single flow front of said substantially uniform flow front of flowable material contacts said at least one vent at said upper portion of said at least one cavity, fig. 10 substantially filling said at least one cavity, encapsulating said at least one substrate, substantially preventing voids in said flowable material, USE/ADVANTAGE.

Sony does not have at least a portion of at least one-cavity preventing covering bond pads of the structures, but Chia does. Chia teaches, in fig. 1, a semiconductor substrate 10 having protruding conductive structures on an underside surface, and an upper surface, ABSTRACT, on the at least a portion of said at least one cavity 28 prevents said flowable material 32 from covering bond pads, using capillary action col. 2, lines 17-27, where cavity at least partially receives protruding structures (microstructure dimension so not shown) of said at least one substrate, top of substrate 12, and at least prevents said flowable material from covering said conductive structures. Chia gives motivation in col. 5, line 64 - col. 6, line 24. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Chia's process with Sony's invention would have been

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beneficial because the upper wall of second mold section holds the underside surface of substrate 14 against the upper surface of first mold section 20.

Sony and Chia do not specify using positive and negative pressure to move the flowable material. As applicant did not object to the use of Official Notice, this is now considered prior art.

Claims 22-23 and 72-73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sony in view of Chia as applied to claims 1-11, 13, 16-21, 24-25, 51-61, 63, 66-71, 74-75 above, and further in view of Honda et al., U.S. Patent No. 5,471,369.

Sony does not teach a large-scale substrate including a plurality of semiconductor devices, but Honda does. Honda teaches in fig. 6A an assembly with said at least one substrate comprising at least one semiconductor die, being connected to a carrier including one of a carrier substrate 6, lead frame 5A, and an interposer 5C, providing a large-scale substrate 3B including a plurality of semiconductor devices, with conductive structures 5C, protruding from bond pads of said plurality of semiconductor devices, with at least one semiconductor die 5A spaced apart from said carrier, introducing resin material between said semiconductor device and said carrier. Honda gives motivation in col. 1, lines 12-18. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to recognize that combining Honda's process with Sony's invention would have been beneficial because it provides a single package with multiple chips to downsize the electronic components.

Response to Arguments

Applicant's arguments filed 4 January 2002 have been fully considered but they are not persuasive. Applicant argues that the invention of Sony alone does not teach the independent claims. The combination is now a combined §103(a) rejection. Applicant further argues that Chia cannot be interpreted as reading on the claim since it does not have conductive structures protruding from the individual semiconductor die abutting portion of the cavity.

Examiner disagrees.

Examiner must give claims their broadest reasonable interpretation, MPEP §2111, "During patent examination, the pending claims must be 'given the broadest reasonable interpretation consistent with the specification.' Applicant always has the opportunity to amend the claims during prosecution and broad interpretation by the examiner reduces the possibility that the claim, once issued, will be interpreted more broadly than is justified, *In re Pratter*, 415 F.2d 1393, 1404-05, 162 USPQ 541, 550-51 (CCPA 1969), *In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027-28 (Fed. Cir. 1997)."

Chia does not limit his semiconductor substrate 12 of figs. 1-3 to having protruding conductive structures on both sides, the underside and upper surface, as stated in ABSTRACT. The side abutting the molding 26 shields the surface and its conductive structure from the flowable resin.

For the above-stated reasons, the rejections under 35 U.S.C. 103(a) of claims 1-11, 13, 16-25, 51-61, 63, 66-75 is deemed proper.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William M. Brewster whose telephone number is 703-305-5906. The examiner can normally be reached on Full Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael Fahmy can be reached on 703-308-4918. The fax phone numbers for

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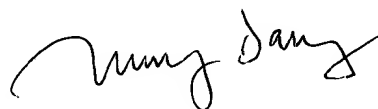
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the organization where this application or proceeding is assigned are 703-305-3432 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

WB
April 5, 2002



Trung Dang
Primary Examiner